

CURRICULUM VITAE

HARRY HARIHARAN

Current Position : Professor, (Bacteriology/Pathobiology)
School of Veterinary Medicine, St. George's University,
Grenada, West Indies

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ACADEMIC QUALIFICATIONS:

<u>Degrees, Diplomas, Board Certification</u>	<u>University or Board</u>	<u>Area of Certification</u>
BVSc	U. of Kerala (India)	Veterinary Medicine
DVSM	U. of Edinburgh (U.K.)	Veterinary State Medicine & Public Health
MSc	U. of Guelph (Canada)	Veterinary Bacteriology & Mycology, Epid. (Zoonoses)
PhD	U. of Guelph (Canada) (Year of completion: 1976)	Bacteriology, Epidemiology

EMPLOYMENT HISTORY:

July 1, 2007 onwards: **Professor**, St. George's University School of Veterinary Medicine, Grenada, West Indies. Responsibilities include teaching Bacteriology & Mycology (**Course Director**) to DVM students, research, establishing graduate courses, graduate student supervision, and diagnostic bacteriology. Also, serving several research committees.

Winner of the Pfizer Award for Research Excellence, 2009.

Winner of Teaching Excellence Award, St. George's University, 2006 (Visiting Professor)

Previous employments:

1996 - June 2007: **Professor** (1988 - 1996: Associate Professor), Bacteriology, Department of Pathology and Microbiology, Atlantic Veterinary College, University of P.E.I., Charlottetown, Canada

Responsibilities included teaching in the DVM and graduate programs, diagnostic bacteriology, research, supervision of graduate students, and participation in MSc and PhD examination committees. Also, **Served the Board of Scientific Reviewers for American Journal of Veterinary Research (AVMA) 2002-2005.**

Winner of UPEI Academic Scholarly Achievement Merit Award, 2004.

1986-1988: Senior Lecturer, Microbiology, Department of Disease Control, School of Veterinary Medicine, University of Zambia, Lusaka, Zambia.

1984-1986: Post doctoral Fellow, Department of Microbiology, School of Medicine, University of Missouri-Columbia, Missouri, USA

1983-1984: Microbiologist/ Veterinary Officer for the Division of Animal Health, United Nations Food and Agriculture Organization, Rome.

1982-1983: Microbiologist, Department of Microbiology, Sarabhai Research Center, Baroda, India

1979-1981: Microbiologist (Bacteriology) for the Division of Animal Health, United Nations Food and Agriculture Organization, Rome.

1977-1979: Microbiologist/Scientist, Research Department, Division of Infectious Diseases, Ciba-Geigy Ltd. Basel, Switzerland

TEACHING RESPONSIBILITIES AND STUDENT RATINGS FOR TEACHING (Last 10 years minimum and maximum* at the Atlantic Veterinary College, Canada)

- (i) DVM Courses (Co-ordinator / Course Director for VPM 201)
- | | |
|---|---------------|
| Bacteriology and Mycology (VPM 201) | 4 to 4.8 /5 |
| Diagnostic Services (VPM 450) | 4.3 to 5.0 /5 |
| Clinical Pathology and Microbiology (VPM 470) | 4.0 to 5.0 /5 |
| Foreign Animal Diseases (VPM 421) (Sept.2000) | NA |
| Seminar (VPM 890/990) | NA |
- (ii) Graduate Courses: (Co-ordinator / Course Director)
- | | |
|------------------------------------|---------------|
| Advances in Bacteriology (VPM 822) | 4.0 to 5.0 /5 |
|------------------------------------|---------------|

*For the question “in general the instructor was effective teacher” (scale 1 to 5) (5 is maximum: Excellent)

GRADUATE STUDENTS SUPERVISED AT UPEI (Canada)

MSc Students: 10 PhD Students: 3

Graduate Student - Examiner (excluding examinership of students supervised)

MSc: 12 (Chair in 7 exam committees) PhD: 3 (supervisory committee member)

Graduate Students at SGU: MSc: 5

MAJOR AREAS OF RESEARCH INTEREST

1. Zoonotic bacteria (*Campylobacter*, *Salmonella*, *E. coli*, *Yersinia enterocolitica*, *Clostridium botulinum*, vibrios, mycobacteria): their prevalence, virulence characteristics, and significance; role of *C. jejuni* in Guillain-Barre Syndrome
2. Antimicrobial drug resistance problems in animal pathogens, including aquatic (fin-fish and shellfish) bacteria, their significance, and prudent use of drugs
3. Commensal bacteria of cats, and their significance
4. Staphylococci associated with canine pyoderma
5. Subclinical mastitis in small ruminants
6. Feed controlled reduction of *C. jejuni* in chicken ceca
7. Diagnostic tests development: ELISA for *Salmonella* enterotoxin, DNA probe for *Renibacterium salmoninarum*
8. Cholera-related toxins, Shiga toxin, botulinum toxin, bacteriophages, plasmids
9. Non-spore-forming anaerobes: isolation, identification, significance
Diagnostic bacteriology with particular reference to rare and emerging pathogens

International Research Projects

Current:

1. Collaboration with Dr. Simone Oliveira, **University of Minnesota, St. Paul, MN, USA**: Genetic diversity of commensal *Escherichia coli* from chickens: application of ERIC-PCR (2007-2008) (Principal Investigator: H. Hariharan).
2. Collaboration with Dr. Simone Oliveria, **University of Minnesota, St. Paul, MN**: Molecular identification of bacteria from feral cats. (Principal Investigator: H. Hariharan).
3. Collaboration with Dr. Omar Oyarzabal, **Auburn University, Auburn, AL, USA**: Molecular characterization on *Campylobacter jejuni*, *C. coli*, *C. lari* from Grenada (2007-2009) (Principal Investigator: H. Hariharan).

Past:

1. Collaboration between University of Prince Edward Island, Canada (Hariharan), and Dr. Willie Donachie, **Moredun Research Institute, Edinburgh, Scotland, UK:** Bacteriology and somatic cell counts in subclinical mastitis in ewes in Scotland (Paper: **Hariharan H, Donachie W** et al published in *Can J Vet Res.* 2004; 68:188-192).
2. Collaboration between University of Prince Edward Island, Canada (Hariharan), and Dr. J. Shanmugam, **Sree Chitra National Institute for Medical Sciences, Trivandrum, India:** Association between *Campylobacter jejuni/coli*, and Guillain-Barré Syndrome in humans (Papers: **Hariharan H** et al. published in *Microbiologica.* 1996; 19:267-271, *Ind J Med Microbiol.* 1995;13:125-129, *Biomed.* 1999;19:87-97).
3. Collaboration with Dr. R. Finkelstein, **School of Medicine, University of Missouri, Columbia, MO, USA:** Cholera-related enterotoxins in *Salmonella* (Paper: **Hariharan H** et al published in *J Clin Microbiol.* 1986; 24:298-300).

Scholarly Awards, Honours

1. **The Pfizer Award for Research Excellence, 2009**
2. **St. George's University Teaching Excellence Award, 2006 (Visiting Professor)**
3. **University of Prince Edward Island Research & Scholarly Achievement Award, 2004.**
4. **Member, Scientific Board, American Journal of Veterinary Research, 2002-2005.**
5. Commonwealth Bureau of Animal Health (UK) Prize, 1975
6. Ballard Fellowship Canada for PhD: 1973-1974

Research Projects at SGU (2007-2011)

1. Phylogenetic and drug resistance studies on porcine *Escherichia coli* strains (2010-2011): Sabarinath A, Tiwari K, **Hariharan H**, Sharma RN, and students (Belot G, Vanpee G)
2. *Salmonella* and drug resistant *E. coli* in Cane Toads in Grenada (2011-2012): Drake M (DVM/MSc program), Zieger U, Pinckney R, Cole R, **Hariharan H**.
3. Occurrence of food-borne bacteria potentially pathogenic to humans in Blue land crab, *Cardisoma guanhumi* (2011-2012): Peterson R, **Hariharan H**.
4. The prevalence of antibiotic resistant staphylococci, particularly *S. pseudintermedius* in lesions of pyoderma from dogs in Grenada (2010-2011): **Hariharan H**, Frankie M, Peterson R, Matthew V.
5. Bacterial causes of fish mortalities in Grenada (2010-2012) Herbers M (DVM/MSc program), Ferguson H, **Hariharan H**, et al.
6. Study of *Bartonella* isolates from cats and their drug resistance properties (2011-2012): Ganchingo J (DVM/MSc student), Kumar K, **Hariharan H**, Brownie C.
7. Intramammary bacterial pathogens in dairy goats, their antimicrobial susceptibility, and use of a commercial test in diagnosing subclinical mastitis (2010-2011): Peterson R, **Hariharan H**, Matthew V, Kolander D, Peterson W, Sharma RN.
8. Prevalence and antimicrobial resistance profiles of *Campylobacter*, *Listeria*, *E. coli* O157 and *Salmonella* isolated from poultry in Grenada (2009-2011): Roopnarine R, Stone D, DeAllie C, **Hariharan H**, Sharma R
9. Occurrence and antibiotic resistance of pathogenic bacteria in shellfish from Grenada (2008-2010): MSc project for Adria Rodriguez, DVM. Faculty: **Harry Hariharan (supervisor)**, Svetlana Kotelnikova, Diane Stone,(committee members), Vanessa Matthew
10. Bacteria associated with mucous membranes, skin wounds, and ears of feral cats in Grenada (2008-2010): **Harry Hariharan** (principal investigator), Jaqueline Fountain, Devin Doherty, Brittany King, Eran Shemer (DVM students), Vanessa Matthew, Sharma RN

11. Antimicrobial resistance in *Campylobacter jejuni*, *C. coli*, & *C.lari* from the ceca of chickens in Grenada: Harry **Hariharan** (principal investigator), Shilpa Sharma, Alfred Chikweto, Claude DeAllie, Vanessa Matthew (2007-2008).
12. Enterobacteriaceae from chicken ceca and susceptibility of *Escherichia coli* to drug including fluoroquinolones, and genetic diversity as determined by ERIC-PCR. (2007-2008): Harry **Hariharan** (principal investigator), Simone Oliveira (U of Minnesota), Shilpa Sharma, Alfred Chikweto, Vanessa Matthew.

PAPERS PUBLISHED IN REFEREED JOURNALS

1. **Hariharan H**, Rodriguez A, Hariharan S. 2011. Update on Guillain-Barre Syndrome-like conditions in animals. *WMC Vet Medicine* 2011; 2 (6):1-9.
2. Rodriguez AI, **Hariharan H**, Nimrod S. 2011. Occurrence and antimicrobial drug resistance of potential bacterial pathogens from shellfish, including queen conchs (*Strombus gigas*) and whelks (*Cittarium pica*) in Grenada. *WMC Microbiology* 2011;2(5):WMC001943:1-11.
3. Sabarinath A, Tiwari KP, DeAllie C, Belot G, Vanpee G, Matthew R, Sharma R, **Hariharan H**. 2011. Antimicrobial resistance and phylogenetic groups of commensal *Escherichia coli* isolates from healthy pigs in Grenada. *WMC Vet Medicine* 2011;2(5)WMC001942:1-10.
4. **Hariharan H**, Matthew V, Fountain J, Snell A, Doherty D, King B, Shemer E, Oliveira, S, Sharma RN. 2011. Aerobic bacteria from mucous membranes, ear canals, and skin wounds of feral cats in Grenada, and the antimicrobial drug susceptibility of major isolates. *Comp Immunol Microbiol Infect Dis.* (Elsevier) 34:129-134.
5. Miller RS, Behringer M, **Hariharan H**, Matthew V, Oyarzabal OA. 2010. DNA identification and characterization of *Campylobacter jejuni* and *Campylobacter coli* strains isolated from chickens in Grenada. *J Appl Microbiol.* 108: 1041-1049.
6. **Hariharan H**, Sharma S, Chikweto, A, Matthew V, DeAllie C. 2009. Antimicrobial drug resistance as determined by the E-test in *Campylobacter jejuni*, *C. coli*, and *C. lari* isolates from the ceca of broiler and layer chickens in Grenada. *Comp Immunol Microbiol Infect Dis.* 32:21-28.
7. **Hariharan H**, Brathwaite-Sylvester E, Matthew V. 2010. Clinical isolates of bacteria from domestic cats in Grenada. *West Ind Vet J.* In Press.

8. **Hariharan H**, Brathwaite-Sylvester E, Matthew V. 2010. Antimicrobial susceptibility of clinical isolates of *Pseudomonas aeruginosa* from dogs in Grenada. *West Ind Vet J*. In Press.
9. **Hariharan H**, Brathwaite-Sylvester E, Matthew V. 2010. Bacterial isolates from urinary tract infections in dogs in Grenada, and their antibiotic susceptibility. *West Ind Vet J*. In Press.
10. Bhaiyat MI, **Hariharan H**, Chikweto A, Brathwaite e, Matthew V, Burnette J, Oliveira S. 2009. Isolation of *Salmonella enteritidis* from thoracic fluid and abdominal mass of a cat with lymphosarcoma. *Veter Med* 54:451-454.
11. **Hariharan H**, Oliveira S, Sharma S, Matthew V. 2008. Antimicrobial drug resistance and genetic diversity of commensal *Escherichia coli* from ceca of chickens in Grenada. *West Ind Vet J*. 8:3-10.
12. **Hariharan H**, Chikweto A, Bhaiyat MI, Brathwaite E, Sharma RN. 2008. Isolation of *Aerococcus viridans* from a hepatitis outbreak in a broiler flock in Grenada. *West Ind Vet J*. 8:72-76.
13. **Hariharan H**, Brathwaite E, Sivanandan V, Matthew V. 2008. Antibiotic susceptibility of clinical isolates of *Staphylococcus intermedius* and *S. aureus* from dogs in Grenada. *West Ind Vet J*. 8:62-66.
14. Sivanandan V, Dragon L, **Hariharan H**, Chikweto A, Matthew V, Sharma RN. 2008. Phaeohyphomycosis of skin caused by *Curvularia* species fungus in a dog in Grenada. *West Ind Vet J*. 8:81-83.
15. Mofya S, Sharma RN, Stone D, **Hariharan H**, Pensick A, Baffa A, Shakai J, Doherty D. 2008. Seroepidemiological study of feline and leukaemia virus and feline immunodeficiency virus infections in domestic and feral cats in Grenada. *West Ind VetJ*. 8:18-22.
16. **Hariharan H**, Sharma S, Chikweto A, Matthew V. 2007. *Enterobacteriaceae* from chicken ceca in Grenada and susceptibility of *Escherichia coli* isolates to fluoroquinolones. *West Ind Vet J*. 7:8-11.
17. Rodriguez A, **Hariharan H**. 2009. Occurrence and antimicrobial drug resistance of potential bacterial pathogens from shellfish in Grenada. *National Shellfisheries Association (US) Conerence proceedings*: Pp. 79-80.

18. **Hariharan H**, Lopez A, Conboy G, Coles M, Muirhead T. 2007. Isolation of *Escherichia fergusonii* from the feces and internal organs of a goat with diarrhea. *Can Vet J.* 48:630-631.
19. **Hariharan H**, Coles M, Poole D, Lund L, Page R. 2006. Update on antimicrobial susceptibilities of bacterial isolates from canine and feline otitis externa cases. *Can Vet J.* 47: 253-255.
20. **Hariharan H**, Murphy GA, Kempf I . 2004. *Campylobacter jejuni*: Public health hazards and potential control methods in poultry. *Veternarni Medicina.* 49:441-6
21. Dobbin G, **Hariharan H**, Daoust P-Y, Hariharan S, Heaney S, Coles M, Price L, Muckle A. 2005. Bacterial flora of free-living double-crested cormorant (*Phalacrocorax auritus*) chicks on Prince Edward Island, Canada, with reference to enteric bacteria and antibiotic resistance. *Comp Immunol Microbiol Infect Dis.*28:71-82.
22. **Hariharan H**, Donachie W, Macaldowie C, Keefe G. 2004. Bacteriology and somatic cell counts in milk samples from ewes in a Scottish farm. *Can J Vet Res.* 68: 188-192.
23. **Hariharan H**, Coles M, Poole D, Page R. 2004. Antibiotic resistance among enterotoxigenic *Escherichia coli* from piglets and calves with diarrhea. *Can Vet J.* 45: 605-606.
24. Udayamputhoor RS, **Hariharan H**, Van Lunen TA, Lewis PJ, Price L, Woodward D. 2003. Effects of diet formulations containing proteins from different sources on colonization of *Campylobacter jejuni* in broiler chickens. *Can J Vet Res.* 67: 204-212.
25. Whitman K, **Hariharn H**, Coles M, JohnsonG. 2001. Modified “Nurse” culture technique for accelerating the growth of atypical *Aeromonas salmonicida* on blood agar. *Bull Aquacul Assoc. Canada.* Spec. Publ. No. 5: 50-52.
26. Abouzeed YM, **Hariharan H**, Poppe C, Kibenge FS. 2000. Characterization of *salmonella* isolated from beef cattle, broiler chickens and humans. *Comp Immun Microbiol Infect Dis* ((Elsevier, UK): 23: 253-266.
27. **Hariharan H**, Cepica A, Qian B, Heaney S. 2000 Toxigenic and drug resistance properties of porcine *Pasteurella multocida* isolates from Prince Edward Island *Can Vet J.* 41: 798.
28. Schurman RD, **Hariharan H**, Heaney S, Rahn K. 1999. Prevalence of Shiga Toxin-producing *Escherichia coli* in beef cattle slaughtered on Prince Edward Island. *J Food Protection.* 63: 1583-1586.

29. **Harikharan H**, Murphy G, Shanmugam J. 1999. Natural and experimental animal models of Guillain-Barre syndrome, and *Campylobacter jejuni* animal models. *Biomedicine* 19: 87-97.
30. Gibson K, Donald AW, **Harikharan H**, McCarville C. 1997. Comparison of two pre-surgical skin preparation techniques. *Can J Vet Res.* 61: 154-156.
31. Hawkins L, **Harikharan H**, Whitman K, Johnson G. 1997. Drug resistance of atypical *Aeromonas salmonicida* from Atlantic salmon and rainbow trout in Newfoundland. *Bull Aquacul Assoc Canada* 97-2 : 39-41.
32. **Harikharan H**, Naseema K, Kumaran C, Shanmugam J, Nair MD, Radhakrishnan K. 1996. Detection of *Campylobacter jejuni/coli* infection in patients with Guillain- Barré Syndrome by serology and culture. *Microbiologica* 19:267-271.
33. **Harikharan H**, Giles J, Heaney S, Arsenault G, Rainnie D. 1995 Bacteriological studies on mussels and oysters from six river system in Prince Edward Island. *J. Shellfish Research* 14:527-532.
34. **Harikharan H**, Kumaran C, Shanmugam J, Naseema K, Nair MD, Radhakrishnan K, Sabarinathan K. 1995. Occurrence of *Campylobacter jejuni/coli* in cases of pediatric diarrhea and Guillain Barré Syndrome. *Ind. J. Med. Microbiol* 13:125-129.
35. **Harikharan H**, McPhee L, Heaney S, Bryenton J. 1995. Antimicrobial drug susceptibility of clinical isolates of *Pseudomonas aeruginosa*. *Can Vet J* 36:166-168.
36. Giles JS, **Harikharan H**. 1995. The plasmid profiles of fish pathogenic isolates of *Aeromonas salmonicida*, *Vibrio anguillarum* and *V. ordalii* from Atlantic and Pacific coasts. *Can J. Microbiol* 41:209-216.
37. **Harikharan H**, Giles JS, Heaney S, Leclerc S, Schurman D. 1995. Isolation, serotypes and virulence-associated properties of *Yersinia enterocolitica* from the tonsils of slaughter hogs. *Can J Vet Res* 59:161-166.
38. **Harikharan H**, Singer JT, Heaney S. 1995. Toxigenicity of culture filtrates of *Salmonella enteritidis* isolates on three mammalian cell lines. *Microbiologica.* 18:261-266.
39. **Harikharan H**, Lamey K, Heaney S. 1995. Isolation of obligate anaerobic bacteria from clinical specimens. *Can Vet J* 36:173.

40. **Hariharan H**, Qian B, Depres B, Kibenge F, Heaney SB, Rainnie DJ. 1995. Development of a specific biotinylated DNA probe for the detection of *Renibacterium salmoninarum*. *Can J Vet Res* 59:306-310.
41. Giles JS, **Hariharan H**, Heaney S. 1994. A microbiological assay for determining sarafloxacin and oxolinic acid concentrations in Atlantic Salmon plasma. *Microbiologica* 17:155-158.
42. **Hariharan H**, Richardson G, Horney B, Heaney S. 1994. Isolation of *Bacteroides ureolyticus* from the equine endometrium. *J Vet Diagn Invest* 6:127-130.
43. **Hariharan H**, Croft E, Heaney S, Bryenton J. 1993. Drug resistance patterns among *Salmonella* isolates. *Can Vet J* 34:757.
44. **Hariharan H**, MacDonald J, Carnat B, Bryenton J, Heaney S. 1992. An Investigation of Bacterial causes of arthritis in slaughter hogs. *J Vet Diagn Invest* 4:28-30.
45. **Hariharan H**, Bryenton J, St. Onge J. 1992. Blood cultures from calves and foals. *Can Vet J* 33:56-57.
46. **Hariharan H**, Heaney S, Bryenton J, Daley J. 1992. Observations on production of hemolysin, LT and drug resistance among enterotoxigenic *Echerichia coli* from piglets. *Comp Imm Microbiol Infec Dis* 15:229-234.
47. Davidson JT, Dohoo IR, Donald AW, **Hariharan H**, Collins K. 1992. A cohort study of coagulase negative staphylococcal mastitis in selected dairy herds in Prince Edward Island. *Can J Vet Res* 56:275-280.
48. Giles JS, **Hariharan H**, Heaney SB. 1991. Evaluation of six antimicrobial agents against fish pathogenic isolates of *Vibrio anguillarum*, *V. ordalii* and *Aeromonas salmonicida*. *Bull Aquacul Assoc Canada*, 91-3:53-55.
49. **Hariharan H**, Bryenton J. 1990. Isolation of *Yersinia spp.* from cases of diarrhea. *Can Vet J* 31:779.
50. **Hariharan H**, Wright T, Long JR. 1990. Isolation and antimicrobial susceptibility of *Campylobacter coli* and *Campylobacter jejuni* from slaughter hogs. *Microbiologica* 13: 1-6.
51. **Hariharan H**, Panigrahi D. 1990. Cholera-like enterotoxin in certain *Campylobacter jejuni* strains: some observations. *Microbiologica* 13: 7-9.

52. **Hariharan H**, McNair N, Bryenton J, St. Onge J, Ojo M, Long JR. 1989. Serotypes of *Pseudomonas aeruginosa* from human and animal sources. *Zbl Bakt-Int J Med Microbiol* 272: 248-251.
53. **Hariharan H**. 1989. Enterotoxin of Public Health Significance in *Campylobacter jejuni* from a monkey. *Ind Vet J* 66: 887.(Brief Report)
54. **Hariharan H**, Bryenton J, St. Onge J, Long JR. 1989. Resistance to *trimethoprim-sulfamethoxazole* in *Escherichia coli* isolated from pigs and calves with diarrhea. *Can Vet J* 30: 348-349.
55. **Hariharan H**, Bryenton J, St. Onge J, McNair N, Long JR. 1989. Antimicrobial drug susceptibility of *Streptococcus suis* type 2. *Irish Vet J* 42: 113-114.
56. **Hariharan H**. 1988. Isolation of *Mycobacterium bovis* from monkeys. *Irish Vet J* 42:5.
57. Panigrahi D, Burks M, **Hariharan H**, Finkelstein RA. 1987. Evaluation of immunodot-blot assay for detection of cholera-related enterotoxin antigen in *Salmonella typhimurium*. *J Clin Microbiol.* 25: 702-705.
58. **Hariharan H**, Booth BA, Brickman TJ, Katt WC, Boesman-Finkelstein M, Finkelstein RA. 1986. Competitive enzyme-linked immunosorbent assay for cholera-related enterotoxins in *Salmonella typhimurium*. *J Clin Microbiol.* 24: 298-300.
59. **Hariharan H**, Mitchell WR. 1977. Type C Botulism: The agent, host spectrum and environment. *Vet Bull (London)* 47: 95-103.
60. **Hariharan H**, Mitchell WR. 1976. Observations on bacteriophages of *Clostridium botulinum* type C isolates from different sources and the role of certain phages in toxigenicity. *Appl Environ Microbiol.* 32: 145-158.
61. **Hariharan H**, Barnum DA, Mitchell WR. 1974. Drug resistance among pathogenic bacteria from animals in Ontario. *Can J Comp Med.* 38: 213-221.
62. **Hariharan H**, Barnum DA. 1974. Minimal inhibitory concentrations of twenty antimicrobial agents to animal pathogens. *Can J Comp Med.* 38: 437-442.
63. **Hariharan H**, Barnum DA. 1974. Antimicrobial drug susceptibility of certain bacterial pathogens from dogs and cats. *Can Vet J.* 15: 108-113.
64. **Hariharan H**, Barnum DA. 1973. Drug resistance among pathogenic *Enterobacteriaceae* from animals in Ontario. *Can J Publ Hlth.* 64: 69.

65. **Hariharan H**, Karrani A. 1972. Incidents of pasteurellosis among cattle in Somalia. *Bull Epiz Dis Afr.* 20: 205-209.

BOOK CHAPTERS AND CONTRIBUTIONS TO BOOKS

66. Hariharan H and Udayamputhoor R T. 2002. "Immunity to Bacterial and fungal Diseases". In: Modern Concepts of Immunology in Veterinary Medicine with particular reference to Poultry Immunology. Thajema Publ.Ltd., Vineland, NJ, USA. Pp.123-166.
67. Hariharan H and Hariharan Shebel. 2002. Bacterial pathogens of free-living birds and their significance in veterinary medicine and public health. In: *Letters by Thousands- A Festschrift* in memory of an eminent microbiologist [Editor Dr. G.R. Scott, U.K]. Pp. 335-345. Publ. Ramachandran and Sakkubai Endowment Trust of India.
68. *E.coli* resistance to trimethoprim-sulfamethoxazole and other antimicrobial agents : Data. In: The Use of Drugs in Food Animals - Benefits and Risks. National Academy of Sciences, National Academy Press, Washington, D.C. 1999., pp. 163-164.
69. Effect of muramyl-dipeptide on resistance to infection with *Klebsiella pneumoniae*. Experimental Data. In: Drugs and Immune Responsiveness. Turck, J.L., Parker, D. (Eds), MacMillian Press, London. p 145.

Published book reviews

70. **Hariharan H. 2007.** " Antimicrobial Therapy in Veterinary Medicine" 4th Edn. By Giguere S et al) *Can Vet J.* **48:744.**
71. **Hariharan H. 1995.** " *Escherichia coli* Domestic Animals and Humans". Ed. CL. Gyles". *JAVMA (Journal of American Veterinary Medical Association).* **207: 451.**
72. **Hariharan H. 1995.** "Essentials of Veterinary Microbiology 5th Edn by GR. Carter. *Can Vet J* **36: 649-650.**

ABSTRACTS PUBLISHED IN CONFERENCE PROCEEDINGS

73. **Hariharan H**, Sharma S, Chikweto A, Matthew V, DeAllie C. 2008 Antimicrobial drug resistance as determined by the E-test in *Campylobacter jejuni*, *C. coli*, and *C. lari* isolates from the ceca of broiler and layer chickens in Grenada. World Veterinary Congress, Vancouver Canada, July 2008.

74. Rodriguez A, **Hariharan H**. 2009. Occurrence and antimicrobial drug resistance of Potential bacterial pathogens from shellfish in Grenada. National Shellfisheries Association (US) Annual Meeting, March 2009.
75. Mateo D, **Hariharan H**, Johnson G. 2004. Antibiotic resistance in marine environments in eastern Canada. 12th Annual Grad Stud Res Days. May 17-18, AVC/UPEI.
76. Dobbin G, **Hariharan H**, Daoust P-Y *et. al.* 2003. Salmonella in double- crested cormorants on PEI, Canada. Ann. Mtg of Wildlife Diseases Assn, Saskatoon August 2003.
77. Whitman K, **Hariharan H**, Coles M, Johnson G. 2001. Modified nurse culture technique for accelerating the growth of atypical *Aeromonas salmonicida* on blood agar. Aquacult Assoc Canada Annual Mtg, Halifax, May 2001.
78. Fuentealba C, **Hariharan H**. 2000. Atypical mycobacteriosis in African hedgehog. Presentation: Western Conf. of Veterinary Pathologists, Banff, Alta. 28 Sep.00.
79. Murphy G, **Hariharan H**, Markham RJF, Saleh T, Montgomery M, Benstead T, MacCormick J. 1999. The association between *Campylobacter jejuni* and the development of Guillain-Barre syndrome. 7th Annual Grad Stud Res Days May 17-18, AVC/UPEI.
80. Abouzeed Y, **Hariharan H**, Heaney S, Poppe C. 1998. Serotyping, phage typing and antimicrobial drug resistance of *Salmonella* isolates from beef cattle, broiler chickens and humans in Prince Edward Island, Canada. Second Pan Common-wealth Conference, Bangalore. February 1998. Proceedings pp. 211-213.
81. Schurman RD, **Hariharan H**, Heaney S. 1998. Prevalence of Shiga like toxin producing *Escherichia coli* on Prince Edward Island. Second Pan Commonwealth Conference, Bangalore. February 1998. Proceedings pp. 205-209.
82. Schurman RD, **Hariharan H**, Heaney S. 1997. Shiga toxin producing *Escherichia coli* in beef cattle at a slaughter house on Prince Edward Island. Conference: *E. coli*: by the Association of American Veterinary Medical Colleges and the Georgetown Center for Food & Nutrition Policy, Washington, DC. September 1997.
83. Schurman RD, **Hariharan H**, Heaney S. 1996. prevalence of verocytotoxic *Escherichia coli* in Prince Edward Island CVMA Convention, Charlottetown. July 96.
84. **Hariharan H**, Kumaran C, Shanmugam J, Nasunak, Nair MD, Radhakrishnan K, Sabarinathan K. 1995. Occurrence of *Campylobacter jejuni/coli* in cases of pediatric

diarrhea and Guillain-Barré Syndrome. Louis Pasteur Centenary Symposium, Trivandrum, India. Nov. 20, 1995. Abstr. No. OM-4.

85. **Hariharan H.** 1995. *Campylobacter jejuni/coli* and Guillain-Barré Syndrome. The Sixth Annual Atlantic Conference of Veterinary Diagnosticians, Charlottetown, Sep. 95.
86. **Hariharan H,** Giles J, Heaney S, Leclerc S, Schurman D, Bryenton J. 1994. Virulence-related characteristics of *Yersinia enterocolitica* isolates. International Conf. on Virulence Mechanisms of Bacterial Pathogens. Ames, Iowa, June 94. Abstr No. 43.
87. Lofstedt J, **Hariharan H,** Duizer J. 1994. Campylobacter bacteremia in diarrheic neonatal calves. Have Meyer 2nd Equine Neonatal Workshop, Tufts University, MA. Oct 2, 1994.
88. **Hariharan H,** Leclerc S, Schurman D, Giles J, Heaney S, Bryenton J. 1993. Carriage of *Yersinia enterocolitica* in porcine tonsils. Can. Asso. Clin. Micro Infec. Dis. 61st Ann. Mtg. (Vancouver) Abstract No. 13.
89. Giles JS, **Hariharan H,** Heaney S. 1992. In vitro efficacy of six antibiotics against *Vibrio* and *Aeromonas* and the plasmid profiles of resistant strains. 2nd Annual Atlantic Universities Graduate Biology Conference, May 92 (Charlottetown).
90. **Hariharan H,** Richardson G, Heaney S, Bryenton J, Gregan B, Moore I. 1992. Aerobic and anaerobic bacteria in equine endometrium. 44th CVMA/ACV Convention, July 92 (St. John's, N.B.)
91. Ahmed HN, **Hariharan H,** Yason C. 1992. Drug resistance and toxigenic properties of *Campylobacter jejuni* from broiler chicken. 44th CVMA/ACV Convention, July 92. Research Rostrum.
92. Giles JS, **Hariharan H.** 1991. Evaluation of six antimicrobial agents against fish pathogenic isolates of *Vibrio anguillarum*, *Vibrio ordalii* and *Aeromonas salmonicida*. Aquaculture Association of Canada 8th Annual Meeting. Abstract # 35. (St. Andrews, N.B.)
93. **Hariharan H,** MacDonald J, Carnat B, Bryenton J. 1991. Bacterial causes of arthritis in pigs. 43rd CVMA Convention Research Rostrum Abstr. (Winnipeg)
94. **Hariharan H,** Heaney S, St. Onge J. 1990. In vitro activities of quinolone drugs and other antimicrobial agents against *Campylobacter jejuni* and *C. coli* of animal origin. Conjoint Meeting on Infectious Diseases, Canadian Association for Clinical Microbiology & Infectious Diseases. Abstr #10. (Halifax)

95. **Hariharan H**, McNair N, Kuzdas K, McNichols L, Lofstedt J, Ogilvie T, Long JR. 1989. Isolation of certain obligate anaerobes from two cases of equine pleuritis. Can. Soc. Microbiol. Ann. Mtg. 89. VM. 2P. (Halifax)
96. **Hariharan H**, McNair N, Long JR. 1989. Antimicrobial drug resistance among *Campylobacter* isolates of animal origin. 5th Internat. Symp. of World Assn Vet. Lab. Diagnosticians. (Guelph, Ont)
97. **Hariharan H**, Ojo MO, Bryenton J, Long JR, McNair N. 1988. Observations on serotypes and antibiotic susceptibility of clinical isolates of *Pseudomonas aeruginosa*. Can Assn Clin Micro Inf Dis. 56th Annual Meeting. (Calgary)
98. **Hariharan H**, Bryenton J, St. Onge J, Long JR. 1988. Antimicrobial drug susceptibility of *Streptococcus suis* type 2. Amer Assn Vet Lab Diagn Ann Mtg. (Littlerock, Arkansas)
99. **Hariharan H**, Booth BA, Brickman TJ, Katt WC, Finkelstein RA. 1985. Competitive ELISA for cholera-related enterotoxins in *Salmonella typhimurium* and *Escherichia coli*. 25th Int Sc Conf on Antimicrob Agents Chemother (ASM). (Minneapolis, Minn)
100. **Hariharan H**. 1976. Type C avian botulism with reference to the role of bacteriophages. Vet Bulletin 47:351 (No.2477).
101. **Hariharan H**, Mitchell WR, Barnum DA. 1975. Toxigenic variation of certain *Clostridium botulinum* type C isolates. Abstr #2. Lab Div Can Publ Hlth Assn. 43rd Annual Meeting. (Toronto)
102. **Hariharan H**, Mitchell WR, Barnum DA. 1975. A study on the role of phages in toxigenicity of some *Clostridium botulinum* type C isolates. Abstr #325. Proc Can Fed Biol Soc. 18th Annual Meeting. (Winnipeg)
103. **Hariharan H**, Barnum DA. 1973. Drug resistance among pathogenic *Enterobacteriaceae* from animals in Ontario. Canadian Public Health Association Annual Meeting, Nov 1972. (Montreal, Que). Published in Can J Publ Hlth 64:69.

THESES

104. Type C Avian Botulism with reference to the role of Bacteriophages. **PhD thesis**. University of Guelph, Ontario. 1976.
105. Studies on Drug Resistance among Pathogenic Bacteria of Animal Origin in Ontario. **MSc thesis**. University of Guelph, Ontario. 1972.

TECHNICAL REPORTS

106. The Use of Lactoferrin hydrolysate as a preventive and/or treatment in an experimental model of enterotoxigenic colibacillosis in neonatal swine: a pilot study (Lofstedt L, Miller L, Montgomery D, Rozee D, **Haripharan H**, Hurnik D, Carmody J, Ogilvie T. 1993), 53 pages. Submitted to Morinaga Milk Industry Co., Higashihara, Zama-City, Japan.
107. Review of protocols and test methods for infectivity testing of genetically engineered microorganisms. **Report submitted to Health and Welfare Canada Health Protection Branch, Ottawa. 1989. (281 pages).**
108. Bacterial diseases of animals and zoonoses in Sulawesi Island, Indonesia. 1980-81. **Report submitted to the UNDP/FAO Rome, Italy. 1981.**
109. **Final report of 12th conference of Office International des Epizootics.** Jakarta, Indonesia. 1980.
110. Immunostimulants with particular reference to infectious conditions. A review submitted for internal circulation to Ciba-Geigy, Basel, Switzerland. 1979.

IMPACT OF RESEARCH: REFERENCES, CITATIONS OF PAPERS, ACKNOWLEDGEMENTS

(i) Standard Text Books and Specialized Books

1. Veterinary Microbiology and Microbial Disease. Quinn PJ *et al.* Blackwell Science Ltd., UK. 2002. Page 95.
2. Campylobacter. Second Edition. Nachamkin I, Blaser MJ. American Society for Microbiology Press, Washington, D.C. Publication year: 2000. Page 158.
3. A Review of Antimicrobial Resistance in the Food Chain. Ministry of Agriculture, Fisheries and Food Technical Report. MAFF Publications, London, England. 1998. Page 152 (ref.no.107).
4. Essentials of Veterinary Microbiology. Fifth Edn. Carter GR, Chengappa MM, Roberts AW. Williams & Wilkins, Baltimore. 1995. Page 133.
5. Veterinary Medicine. Radostits OM, Blood DC and Gay CC, 8th Edition. Bailliere Tindall, London. 1994. Page 683.
6. Topley & Wilsons' Principles of Bacteriology, Virology and Immunity. Vol. 2. Parker MT (Ed). 8th Edition. Edward Arnold, London. 1990. Pages:221-222.
7. Poultry Diseases. Jordan FTW (Ed). 3rd Edn. Bailliere Tindall, London. 1990. Page 59.

8. Disease and Threatened Birds. Cooper JE. International Council for Bird Preservation. Technical Publication No. 10, Cambridge. 1989. Page 21.
9. Botulinum Neurotoxin and Tetanus Toxin. Simpson LL (Ed). Academic Press, Inc. San Diego. 1989. Page 30.
10. Antimicrobial Therapy in Veterinary Medicine. Prescott JF and Baggot JD Blackwell Scientific Publications, Boston. 1988. Page 348.
11. Avian Botulism. Eklund MW and Dowell VR. Charles C. Thomas Publisher, Springfield, Ill. 1987. Pages: 59, 64, 67, 221.
12. Pathogenesis of Bacterial Infection in Animals. Gyles CL and Thoen CO. Iowa State University Press, Ames. 1986. Pages 61, 67.
- 13.. R Plasmid Reservoirs and Circulation. In: Drug Residues in Animals. Veterinary Science and Comparative Medicine: A Series. Rico AG (Ed). Academic Press, Orlando, Florida. 1986. Page 61.
14. Monoclonal Antibodies Against Bacteria. Vol II. Macario AJ1 (Ed). Academic Press, London. 1985. Page 181.
15. CRC Handbook Series in Zoonoses. Steele JH (Editor in Chief) Section D. Jukes TH (Ed) Antibiotics, Sulfonamides and Public Health. Vol I CRC Press, Boca Raton, Florida. 1984. Page 167.
16. The Determinants of Bacterial and Viral Pathogenicity. Smith H, *et al.* Royal Society, London. 1983. Page 203.
17. Diseases of Cage and Aviary Birds. Petrak ML. Lea and Febiger, Philadelphia. 1982. Page 513.
18. Biomedical Aspects of Botulism. Lewis GE (Ed). Academic Press, N.Y. 1981. P. 107.

(ii) Examples of Citations of my research papers in Journals

1. Veterinary Clinics of North America - Small Animal Practice. vol. 34 (March 2004) Morris DO. Ref. No. 9.
2. Clinical Microbiology Reviews. vol. 16 (April 2003) Fredriksson AM. Ref No.58.
3. Emerging Infectious Diseases. vol. 8 (March 2002) Coker AO *et al.* Ref. No. 54.
4. J .Vet Diagnostic Investigation. vol.14 (March 2002) Billington SJ *et al.* Ref. No. 10.
5. Can. J. Vet. Research. Vol. 63 (1999) Thibodeau V *et al.* Ref. No. 21.
6. Compend Contin Educ Pract Vet. vol. 21 (August 1999) White PD. Ref. No.9.

7. Journal of Infectious Diseases. vol. 176 Suppl. 2 (1997) Allos BM *et al.* Ref. No. 26

Acknowledgement of contributions in research publications (example)

Poppe C *et.al.* 2001. *Microbial Drug Resistance* 7:p.210.

PRESENTATIONS

PROFESSIONAL PRESENTATIONS - (INVITED LECTURES)

1. "Bacterial toxigenicity and drug resistance". Seminar presented at the Maritech 2002 Conference at Delta Hotel, Charlottetown. November 22, 2002.
2. "Studies on bacterial toxigenicity and drug resistance with reference to zoonotic pathogens. Seminar presented at St. George's Univ. Grenada. April 4, 2001.
3. "Guillain-Barre Syndrome: Animal Models and *Campylobacter jejuni*". Seminar presented at St. George's University on November 27, 2000.
4. "Guillain-Barre Syndrome: Animal Models and *Campylobacter jejuni*." Seminar presented at Moredun International Research Centre, Edinburgh, UK on May 30, 2000.
5. "The relationship between Guillain-Barré Syndrome and *Campylobacter*". Presented at the CAVP-ACPV Scientific Meeting, Charlottetown Hotel, Charlottetown on July 6, 1996.
6. "Certain Virulence attributes of *Campylobacter* and *Yersinia* species". Paper presented at the invitation of the Association of Microbiologists in India, at Trivandrum. March 23, 1995.
7. "Human disease conditions of recent importance, arising from enteric bacteria of animal origin". Paper presented at the invitation of the college of Veterinary and Animal Sciences, Kerala, India. April 24, 1995.
8. "Virulence factors of *Campylobacter jejuni*, and *Yersinia enterocolitica*". Lecture given at the Post graduate Institute of Basic Medical Sciences, University of Madras, India, at the invitation of the Department of Microbiology. March 29, 1995.
9. "Enteric bacteria of animal origin as causes of human diseases". Lecture given at the Indian Veterinary Research Institute, Bangalore, India, at the invitation of the Institute. March 30, 1995.
10. "Obligate anaerobic bacteria in equine endometritis". Lecture given at the Department of Veterinary Microbiology and Public Health, University of Agricultural Sciences, Bangalore, India. March 31, 1995.

11. "Virulence factors of Campylobacters, Yersinia and Verotoxigenic *E. coli*". Lecture given at Tamil Nadu Veterinary University, Madras. March 28, 1995.
12. "Studies on enteric campylobacters". Paper presented at the invitation of Indian Associates of Veterinary Microbiologists at Indian Veterinary Research Institute, Bangalore, India. January, 1991.
13. "Bacterial causes of arthritis in slaughter hogs in Prince Edward Island". Paper presented at the Red Meat Veterinary Workshop held in the Atlantic Vet. College. Nov. 7, 1990.
14. "Research on *Campylobacter* isolated from slaughter hogs". Paper presented at the Red Meat Seminar held in AVC. Nov.17, 1989.
15. "Immunostimulation in the control of infectious diseases". Paper presented in response to an invitation by the Institute for Animal Health, Denpasar, Bali, Indonesia. October 1980.
16. "Sulpha-synergism and antibacterial activity". Paper presented at the Annual Meeting of Ciba-Geigy Ltd., Basel, Switzerland. June 1979.
17. "The effect of immunostimulants on acute and sub-acute experimental bacterial infections in mice". Paper presented at the Ciba-Geigy Behringwerke Joint Conference on Immunomodulation, Marburg, West Germany. June 1979.
18. "Epidemiology of Botulism". Paper presented at the Bombay Veterinary College, Bombay, India. Nov.2, 1978.

OTHER PRESENTATIONS - Seminars given at Univ. of Prince Edward Island

1. "Toxigenicity, virulence and drug resistance of food-borne and zoonotic bacterial pathogens", Fall 2001, AVC.
2. "The Guillain-Barré Syndrome - *Campylobacter* Connection," Fall 1995, AVC.
3. "Aerobic and anaerobic bacteria of the equine endometrium" Fall 1992, AVC.
4. "Serotypes and antibiotic susceptibility of clinical isolates of *Pseudomonas aeruginosa*". Winter 1989, AVC.
- 5.. "Enteric Campylobacters" Fall 1988, AVC.

RESEARCH: PROJECTS AND FUNDING AT University of PEI, Canada

External grants received: ~ \$400,000

PROFESSIONAL MEMBERSHIPS AND ACTIVITIES (Present and Past)

1. Member of the American Society for Microbiology.
 2. **Member of the Veterinary Medical Association of Prince Edward Island/CVMA**
 3. Member of the Canadian Association for Clinical Microbiology and Infectious
 4. Member of the American Association of Veterinary Laboratory Diagnosticians.
 5. Member of the World Veterinary Association.
 6. Member of the Society for Tropical Veterinary Medicine
 7. Member of the International Society for Veterinary Epidemiology
 8. Fellow of the Royal Society of Health, London, U.K.
 9. Member of the Society for Teaching and Learning in Higher Education
-
10. **Chair, Graduate Affairs Committee, St. George's University School of Vet Med.**
 11. **Chair, Research Committee, SGU School of Veterinary Medicine.**
 12. **Member, Curriculum Review Committee, SGU-SVM.**

EDITORIAL ACTIVITY:

- i) **Editor: BIOMEDICINE. 1999-2001.**
- ii) **Member, Scientific Board of Reviewers, American Journal of Veterinary Research (AVMA) 2002-2005.**
- iii) **Reviewer for the following journals in last 23 years**
 - *Journal of Veterinary Diagnostic Investigation*
 - *Journal of Applied Research in Veterinary Medicine.*
 - *Canadian Journal of Veterinary Research (CJVR), and Canadian Veterinary Journal (CVJ)*
 - *American Journal of Veterinary Research*
 - *Journal of the American Veterinary Medical Association*
 - *Preventive Veterinary Medicine*
 - *Journal of Dairy Research*
 - *Veterinari Medicina (International Journal of Veterinary and Biomedical Sciences)*
 - *Comparative Biochemistry and Physiology*
 - *Small Ruminant Research*
 - *Journal of Aquatic Animal Health*
 - *Aquaculture*
 - *Journal of Veterinary Medicine Series A + B*
 - *Cornell Veterinarian*
 - *Proceedings of the Society for Experimental Biology and Medicine*
 - *Turkish Veterinary Journal*

PROFESSIONAL CONSULTATION:

1. Reviewer of research proposal and grant application for the **Beef Cattle Research Council**, Cambridge, Ontario. (2003).
3. Selected as a Member of the Stakeholder Committee of the **Veterinary Drugs Directorate, Health Canada, Ottawa. (2002).**
4. Visiting Professor for Bacteriology, **School of Veterinary Medicine, St. George's University, Grenada** (2000-03).
5. Visiting Professor, **Moredun International Research Centre, Edinburgh, UK** (2000).
6. Visiting Professor, **Sree Chitra Institute for Medical Sciences, Trivandrum, India** (1995)
7. Reviewer and Liaison Officer for **Natural Sciences and Engineering Research Council (NSERC), Canada** (1995-98).

DIAGNOSTIC SERVICES:

Section Head, Bacteriology, Atlantic Veterinary College, University of PEI,
December 91 - July, 92 and from July, 95- June 2002.
Held responsibility for veterinary clinical bacteriology (mammalian and avian) at AVC.

Responsible for Diagnostic Bacteriology at **SGU SVM** from January 2008 onward

APPENDIX

GRADUATE STUDENTS AND RESIDENTS

(Approved Graduate Faculty at UPEI and SGU)

Graduate Student - Supervisor

<u>Student Name</u>	<u>Year Started</u>	<u>Degree</u>	<u>Thesis Title</u>
J. Giles	1989	MSc	<i>In vitro</i> efficacy of six antibiotics against three bacterial pathogens and the plasma concentrations of two quinolones in Atlantic salmon (<i>Salmo salar</i>). (Completed)

H.N. Ahmed	1990	MSc	Drug resistance and toxigenic properties of <i>Campylobacter jejuni/coli</i> from poultry. (Completed)
D. Schurman	1993	MSc	Characteristics of verotoxigenic <i>Escherichia coli</i> from beef cattle, meat and human sources. (Completed)
M.M. Hussein	1993 (April)	PhD (Channel System, Egypt)	Effects of preservatives, disinfectants and environment on viability of <i>Campylobacters</i> .
Y.M. Abouzeed	1996	MSc	Phenotypic and genotypic characterization of <i>Salmonella</i> from humans, beef cattle and poultry. (Completed)
G. Murphy	1997	MSc	<i>Campylobacter jejuni</i> and Guillain-Barré Syndrome in humans: epidemiological studies and animal models (Completed)
R. Udaymputhur	1999	MSc	<i>Campylobacter jejuni</i> colonization in chicken and effects of nutritional factors/feed (Completed)
D. Mateo	2002	MSc/PhD _____	Antimicrobial drug resistance in aquatic environments in Maritimes (Completed)
A. Rodriguez (SGU)	2007-2010	MSc	Vibrios and zoonotic pathogens in shellfish in Grenada (Writing Thesis)
R. Peterson (SGU)	2010-	MSc	Subclinical mastitis in goats

Graduate Student - Committee Member

J. Davidson	1988	MSc	The effect and control of Coagulase Negative staphylococcal infections in dairy cattle in P.E.I. (Completed)
V. Dhama	1993	MSc	Functional characterization of VP1 of Infectious Bursal Disease Virus (Completed)
H. Brouwers	1997	PhD	<i>Piscirickettsia salmonis</i> - DNA vaccine (Completed)
T. Wright	1998	MSc	Epidemiological studies on verotoxigenic <i>E. coli</i> from pigs
K. Munir	2002	PhD	Salmon anemia virus: RT-PCR (Completed)
D. Mateo	2006-07	PhD	<i>Vibrio splendidus</i> model in clams
S. Mofya (SGU)	2007-08	MSc	Feline leukemia and immunodeficiency viruses – serology (Completed)
M. Herbers	2010-	MSc	Bacterial causes of mortalities in fish

Graduate Student - Examiner (excluding examinership of students supervised)

R. Bildfell	Nov. 1989	MSc	Purification and partial characterization of a rainbow trout egg lectin
Y. Drastini	June 1992 (Chair of committee)*	MSc	Molecular and pathologic characterization of Canadian avian reovirus field isolates

J. Pye-MacSwain	Dec. 1992 (Chair of committee)*	MSc	Plasma pharmacokinetics and bioavailability of oxytetracycline in Atlantic salmon at different temperatures.
G.W. Nganda	Jan. 1994	MSc	Morphology and biofilm studies of the intestines of Nile Tilapia (<i>Oreochromis niloticus</i>)
K.M. M'Aburi	July 1995 (Chair of committee)*	MSc	The Epidemiology of equine strongylosis in the Maritime Region of Eastern Canada
F. E. Almendras	1996	MSc	Transmission and pathogenesis of <i>Piscirickettsia salmonis</i> .
C. M. Trevors	1998	MSc	Immune response of carp and salmon to <i>Piscirickettsia salmonis</i>
T. Bihr	1998 (Chair)*	MSc	<i>Crenosoma vulpis</i> and the domestic dog: prevalence and diagnostic tests.
H. Brouwers	1998	MSc	Qualifying examination
C. Rodriguez	2000	PhD	Qualifying examination
T. Joseph	2001 (Chair)*	PhD	Epitope mapping to identify a PCR template for BHV-1gD
Jingbai Nie	2002 (Chair)*	MSc	Green fluorescent protein expression in potato ring rot bacterium
G. Parkyn	2003 (Chair)*	MSc	Role of antibody in ovine lentivirus disease in exptly infected sheep
K. Munir	2004	PhD	Comprehensive examination
<hr/>			
A. Park	2005 (Chair)*	MSc	DNA vaccine for swine ETEC (<i>E. coli</i>)

* Chair of Examination Committee

(a) **GRANTS RECEIVED**

	<u>Project Title</u> (Recipient)	<u>Granting Agency</u>	<u>Amount</u>	<u>Year</u>
1)	Latex test for <i>Strep suis</i> - II (Hariharan H)	Agriculture Canada (Dean's)	\$ 2,000	1988-89
2)	Infectivity/Toxicity protocols (genetically engineered micro-organisms) (Hariharan H)	Health & Welfare (Health Protection Branch) Canada	\$ 23,600	1988-89
3)	Drug resistance and toxigenicity of enteric Campylobacters (Hariharan H)	MRC	\$ 4,700	1989-90
4)	Role of anerobic bacteria in equine endometritis (Hariharan H & Richardson G)	NSERC General	\$ 9,760	1989-91
5)	Evaluation of antimicrobial drugs against fish pathogenic vibrios and <i>Aeromonas salmonicida</i> (Hariharan H)	DFO/NSERC	\$ 6,000	1990-91
6)	Development of a DNA Probe for <i>Renibacterium salmoninarum</i> / Bacterial Kidney Disease (Hariharan H)	NSERC General	\$ 3,300	1990-91
7)	Investigation of bacterial causes of arthritis in swine on P.E.I. (Hariharan H)	Agriculture Canada	\$ 6,550	1990-91
8)	<i>In vitro</i> effects of lactoferrin on <i>E. coli</i>	Morinaga Milk Company	\$ 740	1991-92

	(Lofstedt J & Hariharan H)			
9)	Pharmacokinetics of sarafloxacin and oxolinic acid in Atlantic Salmon (Giles J & Hariharan H)	(a) Abbot Labs (b) ERDA/DFO	\$ 1,000 \$ 2,500	1991-92 1991-92
10)	Investigation of Bacterial flora of Shellfish - I (Hariharan H)	ERDA/DFO	\$ 10,000	1991-92
11)	Enterotoxigenicity of Campylobacters from chicken (Hariharan H)	APRI/AGRI-FOOD DEVELOPMENT PROGRAM	\$ 8,883	1992-93
12)	Carriage of <i>Salmonella</i> and <i>Yersinia</i> in porcine tonsils (Hariharan H)	Agriculture Canada	\$ 7,221	1992-93
13)	Investigation of Bacterial flora of Shellfish II (Hariharan H & Rainnie D)	ERDA/DFO	\$ 27,000	1992-93
14)	Evaluation of efficacy of lactoferrin hydrolysate in a model of ETEC diarrhea in neonatal pigs (Bacteriology portion - Lofstedt J & Hariharan H)	Morinaga Milk Company	\$ 8,000	1992-93
15)	Toxigenicity of <i>Salmonella enteritidis</i> from poultry and humans (Hariharan H)	MRC	\$ 5,000	1992-93
16)	Viability Studies on Campylobacters (Hariharan H & Hussein, MM)	Govt of Egypt	\$ 7,800	1993-94
17)	Shellfish bacteria: In vivo studies and	ERDA/DFO	\$37,870	1993-94

	immunodiagnostics (Hariharan H & Markham F)			
18)	Verotoxigenic <i>E. coli</i> from beef cattle (Hariharan H & Schurman D)	Agriculture Canada	\$13,069	1993-94
19)	Verotoxigenic <i>E. coli</i> from beef (Hariharan H)	NSERC.GRG	\$ 5,000	1993-94
20)	Studies on <i>Campylobacter. jejuni</i> and Guillain-Barre Syndrome (Hariharan H)	Sabbatical grant	\$ 5,500	1995
21)	Studies on the role of <i>C. jejuni</i> in Guillain-Barre. Syndrome in India (Hariharan H)	Medical Sciences Research Grant	\$ 25,000	1995
22)	Prevalence and characterization of Verotoxigenic <i>E. coli</i> from beef cattle on P.E.I. (Hariharan H)	AVC Internal Research Grant	\$3,000	1996-97
23)	Immunological Studies on G.B. Syndrome (Hariharan H)	GBS Foundation International	US \$. 2500	1997-99
24)	GBS/ <i>C. jejuni</i> studies (Hariharan H)	AVC Grant	\$ 9,550	1997-99
25)	Swine dysentery Vanlunen & Hariharan. H. (Bacteriol)	Finfeeds Internat & Agri- Canada	\$ 8, 100	1997-98
26)	GBS/ <i>C. jejuni</i> studies (Hariharan H et al)	MRC (collaboration with Dalhousie University)	\$ 75,000	1997-98
27)	Effects of feed on <i>C. jejuni</i> colonization in chickens (Hariharan H & Van Lunen)	Poultry Res Council -Canada	\$ 24,450	1999-01
28)	Van Lunen & Hariharan H	Agriculture Canada (matching funds)	\$ 8,906	2000-01

29)	Hariharan H (For AVC and Research)	Stipend grant	US\$ 9407	2000-01
30)	Atypical Aeromonas salmonicida: characterization (Rainnie D, Hariharan H , Lewis PJ)	NF DFA	\$ 25,000	2001-02
31)	Antibiotic resistance in aquatic environment (Johnson G, Hariharan H)	DFO-NSERC	\$ 15, 000	2001-02
32)	Special research grant Hariharan H	Diagnostic Services, AVC, UPEI	\$ 3000	2002-06
33)	Feral cat bacteria Hariharan H (PI)	SRG/SGU	\$3000	2008-09
34)	Canine pyoderma Hariharan H (PI)	SRG/SGU	\$3000	2010
35)	Subclinical mastitis in goats Peterson R, Hariharan H	SRG/SGU	\$3000	2010
36)	Occurrence and antibiotic resistance of pathogenic bacteria in shellfish Hariharan H , Rodriguez et al	SRG/SGU	\$3000	2009
37)	Food borne pathogens in blue land crab, Peterson R, Hariharan H	SRG/SGU	\$3000	2010-11